

4-5 Worksheet #1  
Calculus AB

Name \_\_\_\_\_ #\_\_\_\_\_

Evaluate the following:

1)  $\int t^3 \sqrt{t^4 + 5} dt$

1) \_\_\_\_\_

2)  $\int \left[ x^2 + \frac{1}{(3x)^2} \right] dx$

2) \_\_\_\_\_

3)  $\int \frac{t + 2t^2}{\sqrt{t}} dt$

3) \_\_\_\_\_

4)  $\int 2\pi y (8 - y^{\frac{3}{2}}) dy$

4) \_\_\_\_\_

$$5) \int \sec(1-x) \tan(1-x) dx$$

$$5) \underline{\hspace{10cm}}$$

$$6) \int \frac{\sin x}{\cos^3 x} dx$$

$$6) \underline{\hspace{10cm}}$$

$$7) \int \csc^2\left(\frac{x}{2}\right) dx$$

$$7) \underline{\hspace{10cm}}$$

$$8) \int \frac{-x}{(x+1)-\sqrt{x+1}} dx$$

$$8) \underline{\hspace{10cm}}$$

9) Solve the differential equation:  $\frac{dy}{dx} = \frac{x-4}{\sqrt{x^2 - 8x + 1}}$       9) \_\_\_\_\_

10) Find an equation for the function  $f$  that has the indicated derivative and whose graph passes through the given point.  $f'(x) = \pi \sec(\pi x) \tan(\pi x)$  ,  $\left(\frac{1}{3}, 1\right)$

10) \_\_\_\_\_

11)  $\int_0^2 \left( x \cdot \sqrt[3]{4+x^2} \right) dx$       11) \_\_\_\_\_

$$12) \int_1^5 \frac{x}{\sqrt{2x-1}} dx$$

$$12) \underline{\hspace{1cm}}$$

$$13) \int_{\pi/3}^{\pi/2} (x + \cos x) dx$$

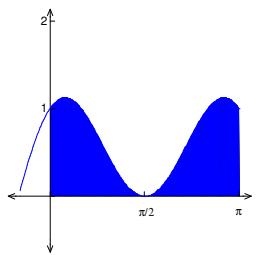
$$13) \underline{\hspace{1cm}}$$

$$14) \int_3^7 x\sqrt{x-3} dx$$

$$14) \underline{\hspace{1cm}}$$

15) Find the area of the region

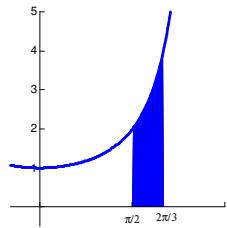
$$y = \sin x + \cos(2x)$$



$$15) \underline{\hspace{1cm}}$$

16) Find the area of the region

$$\int_{\pi/2}^{2\pi/3} \sec^2\left(\frac{x}{2}\right) dx$$



16) \_\_\_\_\_

17) Use the symmetry of the graphs of the sine and cosine functions as an aid in evaluating each of the integrals.

a)  $\int_{-\pi/4}^{\pi/4} \sin x dx$

17a) \_\_\_\_\_

b)  $\int_{-\pi/4}^{\pi/4} \cos x dx$

17b) \_\_\_\_\_

c)  $\int_{-\pi/2}^{\pi/2} \cos x dx$

17c) \_\_\_\_\_

d)  $\int_{-\pi/2}^{\pi/2} (\sin 3x + \cos 3x) dx$

17d) \_\_\_\_\_